APPLICATIONS BEING PREPARED RESEARCH & EXTRAMURAL STUDIES

Philip Morris Incorporated Privileged and Confidential

21 April 1980

Code 1 - Offensive/Urgent Code 2 - Defensive/Urgent Code 3 - Offensive/Normal

Code 4 - Defensive/Normal

DISCLOSURES UNDER CONSIDERATION

RESEARCH & EXTRAMURAL STUDIES

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Code 3 - Offensive/Normal

Code 4 - Defensive/Normal

787 USE OF PHENOLIC GLYCOSIDES AS FLAVORANTS IN TOBACCO

E. Sanders/R&D/Chemical Research/Osdene

Compounds having the formula:

are added to tobacco in the range of about 0.02 - 0.5%. On smoking, said compounds pyrolyze between about 250 - 350°C to release the desired phenol as the only volatile product. The phenolic glycoside tobacco flavorants disclosed herein are particularly advantageous in that they are odorless and can be used in any desirable amount withou adversely affecting pack aroma.

D&O/Hutcheson

CODE 4

7-21-77 Disclosure received.

9-19-78 Disclosure to D&O for evaluation.

10-78 Search received from D&O.

3-79 Further development work being done by inventor.

9-79 Synthetic routes are being developed according to the inventor.

1-25-80 Inventor believes sufficient information is available to prepare application.

3-11-80 Search results sent to inventor for review.

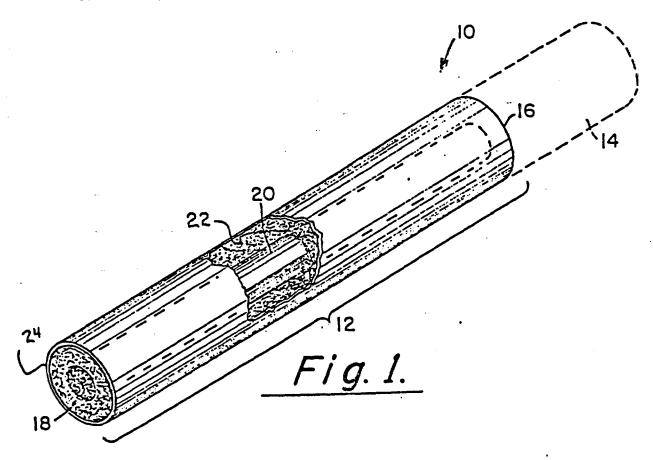
3-14-80 Inventor will redraft disclosure and resubmit to Depaoli for application preparation.

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874 CO REDUCTION BY CIGARETTE ROD DESIGN

R. Jenkins/R&D/Chemical Research/Bourlas/Osdene

A smoking article 10 adapted to reduce the carbon monoxide produced and increase the nicotine to tar ratio is disclosed. The smoking article 10 has a core 20, which is substantially air-impermeable on the longitudial axis, surrounded by tobacco sleeve 22.



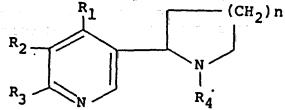
Related to 622.

Blish	
CODE 1	
2-9-79	Disclosure received.
8-13-79	Disclosure sent to Kothe to determine whether an application should be prepared.
10-12-79	Letter to Kothe asking for status.
11-79	H. Kothe advised that preparation of an application not be pursued at this time.
1-80	Discussed again with Kothe in view of 622 allowance; will pursue details with inventor.
1-25-80	Assigned to Blish.
2-18-80	In-house prior art search completedto inventor for review.
3-4-80	First draft completed-to inventor for review.

883B 5-ALKYL NICOTINOIDS AND PROCESS FOR THEIR PRODUCTION

E. Sanders and J. Seeman/R&D/Chemical Research/Sanders/Osdene

A method is disclosed for preparing novel racemic nicotine analogs of the formula:



wherein R_1 , R_3 and $\$_{\mu}$ are hydrogen or alkyl, R_2 is alkyl, and n is one or two.

Split out of 883

FILED D&O/Hutcheson

12-3-79 First draft received--to inventors for review.

1-25-80 Inventors have completed experimental data for incorporation into draft. Corrected draft and examples to be retyped and sent to Depaoli.

2-6-80 Retyped corrected draft returned to D&O.

3-6-80 Additional information sent to D&O.

3-18-80 Executed and mailed to D&O for filing.

3-21-80 Filed in Patent Office.

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816 COPOLYMER POSSESSING WATER AND/OR ETHANOL SOLUBILITY FOR MAKING SMOKING COMPOSITIONS

W. Johnson, Jr. and H. Grubbs/R&D/Chemical Research/Sanders/Osdene

Monomers of flavor-release polymers are mixed with monomers containing polar groups and copolymerized to give a copolymer which possesses water and/or ethanol solubility. Typically the copolymerizations are carried out in bulk using free radical catalysts. Smoking compositions are treated with the polymers by spraying or by incorporating in reconstituted tobacco.

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CODE 2	
3-2-78	Disclosure received.
8-78	Discussed with inventors.
3-79	Awaiting completion of example work and smoking data.
8-79	Inventors indicate experimental work is proceeding and subjective
	evaluation should be completed by the end of the year.
1-24-80	Experimental work completed.
3-11-80	Requested guidance from Dr. Sanders in obtaining necessary informa-
	tion to prepare application.
4-15-80	Inventor Grubbs will organize available data so that we can proceed.

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849 POLYMERS FOR IMPROVING FLAVOR AND AROMA OF SMOKE

H. Grubbs, T. Van Auken, and W. Johnson, Jr./R&D/Chemical Research/Sanders/Osdene/Physical Research/Kassman/Lowitz/Farone

Polymers of unsaturated aliphatic, aromatic carbonates can be prepared in ways similar to the preparations of unsaturated aliphatic, aliphatic carbonates as disclosed in 687. These polymers, when added to cigarette filler, on smoking liberate phenolics to the smoke stream, which improve the flavor and aroma of the smoke.

Spin-off of 687.

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Hutchesor	1
CODE 3	
9-29-78	Disclosure received.
11-6-78	Examples being prepared; synthetic process under development.
9-4-79	Subjective smoking results to be generated to complete project.
1-24-80	Subjective smoking results not yet available.
3-12-80	Memo to Sanders requesting guidance in dealing with this disclosure.
3-18-80	Memo to inventors requesting examples and smoking data.

928 PREPARATION OF N-TERT BUTYL-p-MENTHANE-3-CARBOXAMIDE (WS-14)

R. Comes and S. Haut/R&D/Chemical Research/Bourlas/Sanders/Osdene

A one step synthesis from menthyl chloride leading to a pure WS-14 in a shorter period of time with a comparable yield.

Hutcheson

10-22-79 Disclosure received - inventor notified.

10-31-79 Assigned to Hutcheson.

11-9-79 Search conducted by TIF in 1978 sent to inventors for evaluation.

1-25-80 Awaiting information from possible inventor Van Auken.

3-17-80 Memo to inventors asking for any new data; 4-80 inventors indicated that data will be ready soon.

932 RESOLUTION OF RACEMIC MENTHOL

S. Haut/R&D/Chemical Research/Sanders/Osdene

Inskeep

10-31-79 Disclosure received - inventor notified.

1-21-80 Assigned to Inskeep.

3-31-80 Sanders indicates low priority.

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942 COMPOUND TO ADD TO TOBACCO TO PRODUCE NICOTINE UPON SMOKING

W. Chan/R&D/Chemical Research/Sanders/Osdene

Related to 703.

Inskeep

11-21-79 Disclosure received - inventor notified.

12-79 Assigned to Inskeep.

1-2-80 Copy of disclosure sent to Depaoli re PM 703.

3-25-80 Latest information, examples will be forthcoming.

944 PREPARATION OF MIXED MALONATE ESTERS

E. Southwick/Chemical Research/Sanders/Osdene

Malonate esters useful as monomers for the preparation of flavor release agents.

Inskeep

12-12-79 Disclosure received--inventor notified.

1-21-80 Assigned to Inskeep.

3-25-80 Experimental work needed.

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Source: https://www.industrydocuments.ucsf.edu/docs/nhcj0000

894 USE OF PIPERAZINES AS FLAVORANTS AND/OR COOLING COMPOUNDS

W. Edwards and Y. Houminer/R&D/Chemical Research/Sanders/Osdene

Tobacco flavorant and/or cooling compounds selected from 1,4-disubstituted pyrazines and alkylpiperizines wherein the 1,4-substituents are acyl, sulfonyl and carbamido are disclosed.

Hutcheson

CODE 4

5-7-79 Disclosure received.

11-20-79 Experimental and synthesis work completed; analytical smoking data will be obtained in the near future.

3-14-80 Sanders indicated that the work was near completion. A draft should be ready shortly.

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895 1,2- AND 1,4-DIHYDROPYRAZINES (I, II) AS FLAVORANTS AND/OR COOL-ING COMPOUNDS

W. Edwards and Y. Houminer/R&D/Chemical Research/Sanders/Osdene

Tobacco flavorant and/or cooling compounds selected from 1-substituted-1,2-dihydropyrazines and 1,4-disubstituted dihydropyrazines wherein the 1- and 4-substituents are acyl, sulfonyl and carbamido.

Hutcheson

CODE 4

5-7-79 Disclosure received.

11-20-79 No experimental or synthesis data available at this time.

3-80 No data available for draft purposes at this time.

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896 FLAVOR-RELEASE AGENTS ON TOBACCO

W. Johnson, Jr. and H. Grubbs/R&D/Chemical Research/Sanders/Osdene

Polymeric sulfur release flavorant compounds are disclosed as being useful in smoking products. Processes for their preparation and use on tobacco are detailed.

Hutcheson

CODE 4

5-8-79 Disclosure received.

9-5-79 Preliminary synthesis work underway.

1-24-80 Synthetic work completed; subjectives to be done in near future.

3-14-80 Data to be submitted by inventors as soon as possible.

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T. S. OSDENE

703 AMINE-OLEFIN-ALCOHOL RELEASE AGENTS

J. Seeman/R&D/Chemical Research/Sanders/Osdene

This invention provides tobacco and non-tobacco smoking compositions which contain a quaternary ammonium compound as a flavorant additive. In one of its embodiments this invention provides tobacco compositions which contain a quaternary ammonium flavorant additive such as

Under smoking conditions the above illustrated pyridinium additive and its pyrolysis products flavor the mainstream smoke.

Related to 942.

D&O/Hutcheson

CODE 3

10-15-75 Disclosure received.

1976 Inactivated.

8-79 Further disclosure details received.

8-14-79 Reactivated as a result of extensive examples and smoking data submitted by inventor.

9-14-79 Disclosure sent to D&O for application preparation.

10-10-79 Additional pertinent art sent to D&O.

10-29-79 Comments on Depaoli references sent to inventor.

11-16-79 Inventors' comments received; combined with SAH's and sent to D&O.

12-7-79 Depaoli's comments on prior art and draft claims received.

12-26-79 Redraft received--to inventor for review.

1-2-80 Related case 942 sent to Depaoli.

1-25-80 Review and comments almost completed.

4-16-80 Revised draft received from inventor; 4-18 comments/revisions sent to Depaoli for completion of application.

-883A-CHIRAL NICOTINE ANALOGUES AND A PROCESS FOR THEIR PRODUCTION

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The present invention relates to a novel process for the preparation of enantiomerically pure-nicotine analogues containing alkyl substituents on the pyridine ring at the 4, 5, and/or 6 positions. The invention also relates to intermediate compounds useful for the preparation of such nicotine analogues which analogues are useful as insecticides.

Divided out of 883A.

FILED D&O/Hutcheson

CODE 4

- 3-30-79 Disclosure received.
- 5-31-79 Disclosure sent to D&O for evaluation and application preparation.
- 7-2-79 First draft application received--sent to inventor for review.
- 8-1-79 Inventors comments received-sent to D&O.
- 9-4-79 Redraft received--to inventor for review with request for additional comparative insecticidal activity.
- 10-16-79 Redraft with corrections sent to D&O.
- 11-12-79 Sander's comments on draft sent to D&O.
- 11-20-79 Draft revision underway; filing target date mid December.
- 11-29-79 Redraft received-to inventors for review.
- 12-79 883A relating to racemic 5-methyl nicotine was split out as 883B. Filing delayed until 883B is completed.
- 12-14-79 Inventors comments on draft received.
- 12-31-79 Redraft received-to inventors for review.
- 1-25-80 Application approved by inventors and ready to file.
- 3-18-80 Executed and mailed to D&O for filing.
- 3-21-80 Filed in Patent Office.

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893 CHIRAL 4' AND 4',5'-SUBSTITUTED NICOTINE ANALOGS

W. Edwards/R&D/Chemical Research/Sanders/Osdene

The invention relates to chiral 4' and 4',5'-substituted nicotine analogues and novel processes for their production. The compounds are useful as pharmacological, agrichemical and veterinary agents.

D&O/Hutcheson

CODE 4

- 5-3-79 Disclosure received.
- 7-19-79 Disclosure sent to D&O for patentability study.
- 8-14-79 Patentability study received-filing recommended-sent to inventor for review.
- 10-4-79 Attorney-inventor conference to review Depaoli's opinion, answer questions and determine strategy.
- 10-22-79 Inventor is actively pursuing synthesis and experimental work to complete data necessary to prepare an application.
- 4-80 Inventor hopes to have information completed very soon.

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920 FLAVORING COMPOSITION

H. Grubbs and Y. Houminer/R&D/Chemical Research/Sanders/Osdene

Flavoring compositions capable of releasing two flavor components of vastly differing flavor properties simultaneously are disclosed. The problems associated with the volatility and threshold perception of these types of flavorants is eliminated by use of this precursor system. The precursor has no aroma and will not allow the selective migration of its flavor components from a balanced flavor formulation.

FILED D&O/Hutcheson

- 10-16-79 Disclosure received inventors notified.
- 10-31-79 Assigned to Hutcheson.
- 10-24-79 Sent to D&O for application preparation.
- 11-9-79 Draft application received.
- 11-27-79 Additional examples submitted by inventors; comments and examples sent to D&O.
- 12-7-79 Redraft received--to inventors.
- 1-18-80 Corrected draft returned to D&O.
- 1-25-80 A decision has been made to file separately on the esters and acids; experimental data for the acid application is being completed. Both cases should be filed in February.
- 1-25-80 Application received in final form; ready to execute.
- 2-4-80 Application sent to inventors/manager/director for review.
- 2-12-80 Corrected draft returned to D&O.
- 2-15-80 Executed and mailed to PTO.

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880 USE OF B-DIKETONES TO FORM DIHYDROPYRIDINES AND PYRIDINES

F. DeBardeleben/R&D/Chemical Research/Sanders/Osdene

Pyridines and dihydropyridines are synthesized from B-diketones. For example, reaction of acetylacetone with ethyl B-amino crotonate would generate 2,4,6-triethyl nicotinic acid and 2,4,6-trimethyl nicotinates.

Hutcheson

CODE 4

3-23-79 Disclosure received.

9-20-79 Search by TPI requested. TPI awaiting input from Dr. DeBardeleben before search is conducted.

3-17-80 Memo to inventor asking him to supply information to TPI for search.

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882 USE OF TRANS 2-PENTENAL TO GENERATE THE PYRIDINE RING

F. DeBardeleben/R&D/Chemical Research/Sanders/Osdene

Synthetic routes for preparing nicotine analogues are disclosed wherein the pyridine ring is generated by reacting trans 2-pentenal with, for example, 3-amino crotonate. Various 2,4-dialkyl-nicotines may be prepared.

Hutcheson

CODE 4

3-23-79 Disclosure received.

9-20-79 Search by TPI requested. TPI awaiting input from Dr. DeBardeleben before search is conducted.

3-17-80 Memo to inventor asking him to supply information to TPI for search.

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885 APPLICATION OF TOBACCO ADDITIVES TO CIGARETTE WRAPPERS

J. Seeman and H. Spielberg/R&D/Chemical Research/Sanders/Osdene/Flavor Development/Daylor/Meyer

The proposal is to incorporate the additive to the cigarette paper, either by passing the paper through a solution of the additive(s) in a easily removable solvent or by incorporating the additive to the paper matrix during the paper manufacture.

Hutcheson

INACTIVE

CODE 2

4-4-79 Disclosure received.

3-79 Preliminary search completed.

1-25-80 Inactivated on basis of prior art.

850 POLYMERS OF NICOTINE AND NICOTINE ANALOGUES

W. Johnson, Jr./R&D/Chemical Research/Sanders/Osdene

Polymers of nicotine analogues and of nicotine itself, which possess carbonate or ester linkages, are to be prepared from suitable substituted nicotines via condensation reactions. The polymers would consist of nicotine moieties, moieties of substituted nicotines joined by ester linkages or of nicotinic esters that have been condensed with appropriate diols, which may or may not be nicotinic in character but which in combustion and/or pyrolysis will yield nicotine and products that do not adversely affect cigarette smoke.

Hutcheson

CODE 4

9-29-78 Disclosure received.

11-6-78 Search completed--to inventor for review.

Awaiting more definitive information and examples.

9-4-79 Project in preliminary stage.

1-25-80 No experimental data available.

3-12-80 Memo to Sanders requesting assistance in dealing with this disclosure.

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851 SOLANESOL ANALOGUES AND ESTERS THEREOF FOR APPLICATION TO CIGARETTE FILLER

W. Johnson, Jr., H. Grubbs, and G. Chan/R&D/Chemical Research /Sanders/Osdene

Solanesol analogues and esters thereof are to be applied to cigarette filler and smoked. Improved subjective reponse should result. The efficacy should optimize in those cigarettes whose tar deliveries are low, i.e., below 9-10 mg when smoked by standard machine methods.

Hutcheson

CODE 4

9-29-78 Disclosure received.

3-79 Methods for preparing compounds being developed.

9-4-79 Project in preliminary stage.

1-25-80 Experimentation to make compounds still underway.

3-12-80 Memo to Sanders regarding this disclosure—will meet with inventors to discuss.

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897 SYNTHESIZING PYROLYTIC PRECURSORS TO PRODUCE ALDEHYDIC-TYPE **FLAVORANTS**

M. Bourlas and H. Grubbs/R&D/Chemical Research/Sanders/Osdene/Analytical Research/Bourlas/Lowitz/Farone

Polymeric flavorants release compounds having controlled thermal decomposition properties producing aldehydic-type flavorants on combustion are disclosed. Prior to smoking, the compounds are non-volatile and non-migratory.

Hutcheson CODE 2 5-7-79 Disclosure received--lacks detail. 9-4-79 Preliminary synthesis of monomers underway. 1-25-80 Examples prepared for subjective evaluation. 3-80 Inventors hope to complete this project by the end of August.

898 COMPOUNDS CONTAINING THE BASIC ELEMENTS OF THE NICOTINE MOLE-CULE

W. Edwards and J. DeBardeleben/R&D/Chemical Research/Sanders/Osdene

Nicotine analog with fixed geometry through attachment of the N-methyl to the 2-position of the pyridine ring. Alkylated or arylated equivalents.

Inskeep CODE 4 5-10-79 Disclosure received. 9-79 Progress will be reported by inventors. 3-25-80 Alternative of publishing being investigated.

899 METHYL-PYRIDO-AZABICYCLO-OCTANE AND ALKYL-SUBSTITUTED ANALOGUES

J. Seeman and C. Chavdarian/R&D/Chemical Research/Sanders/Osdene

Nicotine analog with fixed geometry through methylene bridging from 5 to 2. Alkylated homologs.

Related to 893.

NACTIVE Inskeep

CODE 4

Disclosure received 5-15-79

11-20-79 Awaiting hopefully more promising test results.

Note to inventors seeking more information. 3-26-80

May be several months before HPLC results; inactivated. 4-15-80

S. Haut, R. Comes, M. Core/Chemical Research/Sanders/Osdene

Compound useful as a flavor additive much like WS-14.

Inskeep

12-79 Disclosure received—inventors notified.

1-21-80 Assigned to Inskeep.

3-11-80 Certain prior art cited to inventor.

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947 COOLING COMPOUND

F. DeBardeleben/Chemical Research/Sanders/Osdene

Hutcheson

10-79	Disclosure made informally to S. Hutcheson
1-80	Disclosure logged in-inventor notified.
1-21-80	Assigned to Hutcheson; inventor working on synthesis of compounds.
	Memo to inventor asking him to supply information to TPI for search.

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959 FLAVOR SYSTEM

J. Kang/Chemical Research/Sanders/Osdene

Inskeep

4-8-80 Disclosure received—inventor notified. 4-80 Assigned to Inskeep. 4-17-80 In-house search completed.